

FLORICULTURE

ARNOLD ARBORETUM

HARVARD UNIVERSITY

23343 rel
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BULLETIN

OF

POPULAR INFORMATION

NEW SERIES. VOLUME VI

1920

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JAMAICA PLAIN, MASS.

MAY 6, 1920

Effects of the Severe Winter. The winter of 1919-20, although less destructive to plants in the neighborhood of Boston than that of 1917-18, has been exceptionally severe. Once in December, before the ground was protected by snow, the thermometer at the Arboretum fell to 12° below zero; later heavy and numerous falls of snow buried and protected plants less than three or four feet high. Unfortunately the snow rested on a layer of ice which did not thaw until the disappearance of the snow at the end of March. This ice layer injured small plants, and this, or the cold nights in December, killed in the Nursery the seedling plants of *Juniperus Pinchotii*. This native of the Panhandle region of northwestern Texas is a handsome tree with bright red fruit. Recently introduced into gardens by the Arboretum, it was hoped that a tree which grows naturally in a region of excessive winter cold would thrive in New England. The heavy snow and high winds have broken the branches of several trees and shrubs, and the destruction of the fine species of the dwarf form of the Norway Maple (*Acer platanoides* var. *globosum*) by the weight of the snow on the branches is a serious loss. This plant was imported from Germany in 1888 and for several years has been an object of interest and curiosity to visitors to the Arboretum, especially those who like to study plants of abnormal growth; and its portrait has been thrown on the screen at many popular lectures on the Arboretum and its plants. Field mice, which have destroyed during the winter by girdling thousands of young trees in New England orchards and nurseries, have done comparatively little damage in the Arboretum. A number of shrubs have lost branches; a ring of bark has been entirely removed from the stem of one of the three plants of a Chinese Box Elder, *Acer griseum*, and this plant will

probably not recover. Other interesting young trees which have been badly injured by mice are *Acer mandshuricum*, the great Box Elder of northern Korea and Manchuria and *Acer Davidii* from western China. Rhododendrons, Kalmias and broad-leaved Evergreens are generally in good condition, although the Kalmias which last year produced an unusually large crop of flowers this year are carrying few flower-buds. A few conifers have suffered, but the damage to these plants is less serious than it was two years ago, and, judging by reports from Long Island and the middle states, the Arboretum conifers have suffered less than those in some of the collections further south. The young Cedars of Lebanon raised from seeds gathered in Asia Minor, and for many years believed to be proof against the rigors of the New England winter, have lost or will lose many leaves as they did for the first time two years ago. The buds appear to be uninjured and the trees will undoubtedly put out new leaves. Their spring beauty, however, is spoiled, and such losses of foliage will check their growth which up to two years ago had been more rapid than that of any other conifer in the collection. Two years ago the numerous specimens in the Arboretum of the Black Pine of Japan (*Pinus Thunbergii*) lost much of their foliage and the trees look even worse now than they did two years ago. The buds are generally alive, but it will be a long time before these trees regain their former vigor. This Black Pine is a southern sea-level tree and in this country is more picturesque than beautiful. In Tokyo, however, and by the sides of the great southern Japanese shore highway there are magnificent specimens. Raised at the Arboretum from seeds planted in 1893, *Pinus Thunbergii* was never injured here until the cold of the winter of 1917-18 ruined its foliage. The short-leaved southern Pine (*Pinus echinata*) has lost many leaves again as it did two years ago; and although this valuable tree finds its northern home on Staten Island and Long Island, New York, it will probably never grow to a large size here or prove itself important for the decoration of northern parks. The oldest specimen in the collection was raised here in 1879 from seeds collected at the Peaks of Otter in Virginia and has suffered less than the younger trees raised from Staten Island seeds. Young plants of the Mexican White Pine (*Pinus ayacahuite*) which have been growing in the Arboretum for several years and have not before been injured by cold look as if they had been browned by fire and will probably die. Small plants of *Abies magnifica*, the great Red Fir of the California Sierra Nevada, and *A. cephalonica* var *Apollinis*, from southeastern Europe, both trees of doubtful hardiness, are killed; and of the three trees of the California form of *Abies concolor* the *A. Lowiana* of English nurserymen and the *A. Parsonsii* of some American gardens, the leaves of two are for the first time badly browned, while those of the third are uninjured. Here and there a branch with brown leaves appears in the Pinetum, but on the whole the collection of conifers is in better condition than might have been expected. Among the trees which do not grow naturally in New England three are now conspicuous by the freshness and beauty of their foliage; these three trees are the Hemlock from the high mountains of the Carolinas (*Tsuga caroliniana*), the Spruce-tree of the Balkan Peninsula (*Picea omorika*), and a Japanese Fir-tree, *Abies homolepis* (or *brachyphylla*). The last is a tree of dense habit, dark green

leaves and purple cones; it must not be confused with another Japanese Fir-tree which botanists consider a variety of it and now call *A. homolepis* var. *umbellata*. This is a faster growing tree of open habit, with light green leaves and gray cones. It is less hardy than the typical form, and leaves on most of the specimens in the Arboretum have been browned during the past winter as they were two years ago. Except in general collections and as a curiosity this variety of *Abies homolepis* is not worth planting in this part of the world.

A late spring. By the first of April the frost was out of the ground here and there was every prospect of an early spring, but April has been a cold and rainy month with little sunshine and most spring flowers are opening nearly two weeks later than in normal seasons. They have so far, however, escaped the late frosts which too often in this climate ruin April flowers, like those of *Magnolia stellata*, *M. kobus* and early flowering Rhododendrons.

Winter-flowering Witch Hazels. The southern Missouri and Asiatic Witch Hazels have all flowered during the winter, but for some reason which it is not easy to explain their flowers opened five or six weeks later than in other years. *Hamamelis mollis* from central China is the handsomest of these plants and well deserves a place in winter gardens for its flowers with their large bright yellow petals and handsome leaves which in late autumn assume before falling brilliant shades of yellow. A Japanese species (*H. incarnata*), differing from all the other Witch Hazels in the dark red petals of its small flowers drooping on long stems, is a recent addition to the Arboretum collection and has flowered here this winter for the first time. As a botanical curiosity it is interesting, but judged by the first flowers it has produced in America it has little to recommend it as a garden plant.

Cornus mas. The Cornelian Cherry of old-fashioned gardens opened its first flowers on April 18th, and the leafless branches are still covered with its compact, many-flowered clusters of small bright yellow flowers which are unusually abundant this spring. This Cornel is a native of eastern Europe and western Asia, and for three centuries at least has been a favorite garden plant in western Europe. It is a large and shapely shrub and with a little care can be made to grow with a single stem in the form of a small tree. It is handsome from early spring until late in the autumn, for the leaves are large dark green and lustrous but fall without having changed their color, and the short oblong, scarlet, lustrous or rarely yellow fruit which hangs on stout stems is cherry-like in appearance and ornamental. The fact that the flowers are never injured by April frosts greatly adds to the value of this plant for the spring decoration of parks and gardens in the northern states.

Corylopsis is an Asiatic genus of the Witch Hazel Family with light yellow flowers in long drooping clusters appearing before the leaves which have a general resemblance to those of the Witch Hazels. Nearly all the species are represented in the collection but only *C. Gotoana*, a native of the elevated regions of central Japan, is worthy of general cultivation in eastern Massachusetts, for it is perfectly hardy here even the flower-buds having been uninjured by the exceptionally low

temperature of the winter of 1917-18. This is one of the handsomest of the early spring flowering shrubs which can be grown in this part of the country and one of the important Arboretum introductions. The largest plant in the collection is on Hickory Path near Centre Street and is now covered with flowers. A small plant of another Japanese species, *C. pauciflora*, growing on Hickory Path near *C. Gotoana*, is also now covered with flowers. This is unusual, for although the plant is hardy the flower-buds are often killed by cold, as are those of another Japanese species, *C. spicata*. The stems and branches of the Chinese species, *C. Veitchiana* and *C. Willmottae* are uninjured but the flower-buds are killed. These plants have flowered in the Arboretum, but two years ago they were killed to the ground and there is little hope that these handsome shrubs will prove useful for New England gardens.

Prinsepia sinensis. The value of this handsome shrub becomes more and more apparent with the passing years. The first plant in the Arboretum to unfold its leaves, these are already nearly full grown and by the time this Bulletin reaches its Boston readers the plants will be covered with bright yellow flowers. This *Prinsepia* is a perfectly hardy vigorous and fast-growing shrub; the young leaves and the flowers have never been injured by spring frosts, and it can be said of it that it is the best contribution Mongolia has made to our gardens. *Prinsepia sinensis* has proved difficult to propagate, but two years ago it produced for the first time a little fruit and this seed has germinated. It is possible, too, with skill and patience to increase this plant by cuttings, but until the Arboretum plants produce good crops of fruit *Prinsepia sinensis* will not be common in this country. If it could be obtained in sufficient quantities it would make a beautiful and impenetrable hedge as the stems and branches are armed with sharp spines.

Early Flowering Rhododendrons. Only three or four of the Rhododendrons which bloom before the first of May can be grown in this climate. The handsomest of these, *Rhododendron mucronulatum*, which has flowered every spring in the Arboretum for nearly twenty years, has perhaps not before been as thickly covered with flowers as it has been during the past ten days. A native of northern China and Korea it is a tall deciduous-leaved shrub inclined as it grows old to a straggling habit, with long slender branches and pale rose-colored flowers which open before the leaves appear and have never been injured here by April frosts. This is one of the handsome April flowering shrubs which can be successfully grown in this climate. The flowers are still in good condition on the plants in the large group on the lower side of Azalea Path. *Rhododendron dauricum*, which begins to bloom a few days earlier than *R. mucronulatum*, has been unusually handsome this spring as the flowers which are generally destroyed by frost have not been injured. It is a native of eastern Siberia and Manchuria, with bright rose-colored flowers and dark green leaves which in this climate remain on the branches until midwinter. There is an evergreen variety, (var. *sempervirens*), which has also flowered well this spring with the species on the upper side of Azalea Path. The flowers of the hybrid between *Rhododendron dauricum* and the Himalayan *R. hirsutum*, known in gardens as *R. praecox*, "Early Gem," are also in good condition this year; usually they are ruined by frost.